

IN THE CLAIMS

1. (currently amended) A method to monitor voltage and current signals using a multi-function generator protective relay system, said method comprising the steps of:

measuring at least one of a voltage, a current and a phase angle;

displaying at least one of a relay contact status and the power values on a display; and
maintaining the multi-function generator protective relay system in an energized state when a generator operationally coupled to the multi-function generator protective relay system is being energized.

2. (original) A method in accordance with Claim 1 wherein said step of measuring comprises the step of connecting a plurality of relays having a combination of functions to a device.

3. (original) A method in accordance with Claim 1 wherein said step of measuring comprises the step of continuously sampling at least one of a current, a voltage, and a frequency.

4. (original) A method in accordance with Claim 1 wherein said step of measuring comprises the step of performing a self-test diagnostic when at least one of a power-up occurs, when an internal fault is detected and an auxiliary power is lost.

5. (original) A method in accordance with Claim 1 wherein said step of measuring comprises the step of determining a true root mean square value for at least one of a voltage and a current.

6. (original) A method in accordance with Claim 5 wherein said step of determining a root mean square value comprises the step of detecting failures in a generator.

7. (original) A method in accordance with Claim 6 wherein said step of detecting failures comprises the step of recording a date and time of failure.

8. (original) A method in accordance with Claim 7 wherein said step of detecting failures comprises the step of storing in memory a failure, when a failure occurs.

9. (currently amended) A method in accordance with Claim 1 further comprising ~~wherein said step of determining a power value comprises~~ the step of opening a circuit breaker when at least one of an internal fault is detected within the multi-function generator protective relay system and auxiliary power is lost.

10. (currently amended) A metering system comprising a plurality of electrical relays, a display, a microprocessor, a memory, and a plurality of printed circuit boards configured to accept voltage and current to be measured, and an auxiliary power supply configured to maintain said system in an energized state when a generator operationally coupled to said system is being energized, said microprocessor electrically connected to the memory, the printed circuit boards, and the display, said printed circuit boards electrically connected to a device, said system configured to continuously monitor voltage, current and frequency to protect the device.

11. (original) A system in accordance with Claim 10 wherein said system further comprises a watchdog relay connected to the device to be protected.

12. (original) A system in accordance with Claim 11 wherein said watchdog relay configured to perform self-diagnostic checks at power-up.

13. (original) A system in accordance with Claim 11 wherein said watchdog relay configured to be connected to a breaker trip circuit, said breaker trip circuit configured to open a breaker when at least one of an internal fault is detected and auxiliary power is lost.

14. (currently amended) A system in accordance with Claim 10 wherein said ~~system further comprises an auxiliary power supply~~ is connected to a device.

15. (original) A system in accordance with Claim 14 wherein said auxiliary power supply configured to operate as a switched mode auxiliary power supply.

16. (original) A system in accordance with Claim 10 wherein said relays comprise change over relay contacts, said change over contacts include one normally open contact and one normally closed contact.

17. (original) A system in accordance with Claim 10 wherein said system configured to control at least one relay based upon measurements of at least one of a synchronization, synchronization with dead-bus, directional power, phase balance, AC time over, AC time over with voltage restraint, under voltage, phase sequence, neutral ground fault, over voltage, over frequency, and under frequency connected to a device to be monitored and protected.

18. (original) A system in accordance with Claim 10 wherein said system configured with an event log, said event log recording a date stamp, a time stamp, a relay number, a function assigned to a relay, and a present parameter when a relay is tripped.

19. (original) A system in accordance with Claim 10 wherein said system further comprises an RS-485 communications port.

20. (original) A system in accordance with Claim 19 wherein said RS-485 communications port configured as an electrically isolated 2-wire plus ground electrical interface.

21. (original) A system in accordance with Claim 10 wherein said display configured to display a status of at least one of a current, a voltage and a frequency for a plurality of relays.

22. (currently amended) A system in accordance with Claim 10 wherein said system further comprises a current transformer input, ~~current transformer inputs~~.

23. (original) A system in accordance with Claim 22 wherein said current transformer input configured to be electrically isolated from ground and from other current transformers.

24. (original) A system in accordance with Claim 15 wherein said auxiliary power supply is operable within a voltage range of 8Vdc to 36Vdc.

25. (original) A system in accordance with Claim 10 further comprising a multi-level security system configured to allow different levels of access to said metering system through input of a password.